

# Technology Can Simplify A Complex Produce World

Software helps produce businesses deal with the complexities people simply don't have time for anymore.

BY MIKE DUFF

**T**oday's consumers expect to have a greater variety of quality produce available year-round—and it all has to taste great. And technology has helped produce providers enhance the quality of products, whether those products are crossing a state or an ocean. However, that technology is not without its challenges.

“Fresh produce has a fragmented grower base and has to generally deliver a highly sensitive product through a multi-stage, long-distance supply chain at increasingly tight margins,” says Mick Heatherington of software provider Prophet North America, Westlake Village, CA. “Against this backdrop of continual change and inherent risks, data exchange and modern technology plays a key role in meeting the challenges the fresh produce industry faces. The internet, the cloud, blockchain, automation and AI. Every year seems to bring more technological promises and threats.”

The simple truth is business is getting more complicated each day, adds Charles Waud, president of WaudWare Inc., Kincardine, Ontario, Canada.

“Software helps businesses deal with the complexities people simply don't have time for any more,” he says.

For example, he adds, keeping track of where every lot of produce came from and where it goes takes a lot of effort if it's being recorded manually, and that's further complicated if there is a recall.

“Software that records both of these things, receiving and selling, as they happen reduces manual intervention and eliminates the risk of errors. All-in-one software packages specifically designed for fresh produce are revolutionizing the industry and helping owners get the information they need quickly and easily. Owners and managers are leaning toward complete software solutions that can handle all their business functions in one place, such as inventory and accounting — with built-in traceability — buying/selling, and detailed management reports,” says Waud.



## HIGH TECH, HIGH TOUCH

Supply chains across the globe are growing quickly and digitizing at the same time, even as labor and truckers have become scarce, issues that technology can address, says Ashton Braun, chief executive at Silo, headquartered in San Francisco, CA.

“When faced with opportunities for rapid growth, businesses need to be able to quickly do more with less, and at the same time attract new, top talent,” Braun says. “All of these issues can be addressed through technology. The produce industry, however, is unique, given it is heavily reliant on a strong human element to hedge against perishability risks. For software to be successful in this industry, it needs to include a strong human element.”

He adds that software designers “need to dedicate themselves to understanding how to best serve and empower the actual boots on the ground within the supply chain.”

“At Silo, our users get the best technology, but they also get our team. The people on our team come from many diverse backgrounds and industries. They are problem solvers and are here to learn from, and serve our industry's seasoned veterans and experts. Innovation happens when you combine new streams of thoughts with industry expertise.”

Just keeping up with change in the tech sector dedicated to the produce industry is tough.

“It's clear the benefits and competitive advantages of these new technologies will be realized by fresh produce companies that integrate software that is capable of intelligently managing their processes and tasks, and can manage the full range of risks and complexities inherent in the fresh produce supply chain,” Heatherington says.

“Technology has no doubt delivered incremental gains to the fresh produce industry over the last few decades,” he adds. “There have been promises of revolutions, but the reality has been that technology has consistently delivered regular evolution and improvements of business processes.”

Braun says produce companies have to lean on accurate data.

“They are high-frequency, high-value trading businesses that run 24 hours, seven days a week, 365 days a year,” he says. “A produce business lives and dies through the performance of every package, and succeeds by selling millions of packages each year. However, with so much to do every day, and with the importance of each case being analyzed, it can be extremely difficult to

stay on top of exactly how well a business is performing. Couple this with slim margins on each package, and things can go south fast.”

Braun says one solution for the produce industry is to “manage by exception” through technology.

“Managing by exception means training technology to understand what is the expected, profitable outcome for each and every daily action across the business, and what is an abnormal or undesired outcome of that business action,” he explains, and offers the following accounts receivable example.

If a business sells to 100 customers, and 99 checks come in on time today, why should the business waste time inspecting and processing 99 payments? Software can reconcile those 99 payments to the business’ bank and accounting systems automatically, allowing that business to spend its time focusing on that one exception needing attention.

“This is what the future of the industry’s operations will look like from a technical perspective.”

### TACKLING PRODUCE PROBLEMS

Software can do more than ever, not only because technology has improved, but the understanding of what’s needed has become more sophisticated.

Over the past year, Seattle, WA-based

Shelf Engine has expanded its data science team by more than 500%, says Steph Brill, product manager. The investment is helping Shelf Engine scale up its technical food waste algorithms, models and AI to help produce providers ensure that what they’re moving through the supply chain arrives intact.

## As software and functions tied to them become more robust, opportunities for effective electronic collaboration become additionally frequent.

“We’re building more sophisticated models to help us expand across the store,” Brill says. “This means taking factors such as weather, big sporting events and item substitutability as inputs into our AI system to forecast optimally under a variety of conditions.”

Shelf Engine has implemented advanced inventory management algorithms to maintain in-stock rates, reduce waste and optimize for items’ sales potential, she explains. “Our algorithms take all sorts of things into account, such as day-of-the-week effects on consumer buying habits, major trends, variability in shelf

lives of items and promotional impacts.”

Brill observes that much of the produce industry remains a pen-and-paper business.

“Shelf Engine can take these manual and human error-prone processes online. Our data science and product teams take various areas and embed them in our advanced algorithms. By doing so, we guarantee sales and reduce retailers’ food waste impact,” Brill says.

Shelf Engine brings to the produce industry increased access to data, storing and using historical data trends in its machine learning algorithms. In the course of that, the company provides the ability “to use information in our models around consumer trends like organic preferences and item substitutability to drive ordering decisions. Ultimately, what ends up in store for consumers to purchase is traceable earlier in the supply chain with Shelf Engine’s help,” Brill says, adding that in 2021, Shelf Engine prevented 4.5 million pounds of food waste, reducing food waste in grocery stores by 32%.

### EARLY ADOPTERS BIG WINNERS

Technology and software can create ongoing advantages to those who are open to their applications.

“The benefits of automation have not been fully realized across the supply chain, and considerable opportunities are arising to

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improve processes, mitigate risks and protect margins,” Prophet’s Heatherington says. “Whenever there has been a need for more than just a commercial relationship, progress has normally been slower. Automation benefits can be realized by those companies that work through the details of their processes on a day-to-day basis and take an evolutionary approach to delivering those benefits when applying new technology.”

Smart software can deliver process and task automation, “and we are not just talking about automated data to and from packing machinery and graders,” he adds. “Software that can do what the human interaction does and an ability to automate complex series of processes and tasks, searching and collecting the right data to calculate and return the correct results and actions for tasks to be completed on the ERP is of huge value given the current situation.”

Software is increasingly critical to those operations that ensure produce arrives in front of consumers in the right condition. Waud said his company’s Produce Inventory Control System can ensure retailers get produce in the condition they want.

“Software systems like PICS that track the date packed, best before and expiration date of a lot of fresh produce will help both the seller and purchaser agree on expectations,” Waud says. “If a purchaser requires the freshest produce, the seller can let them know what is available. If a purchaser is satisfied with older or blemished produce, the appropriate lots can be identified and shipped. If produce that is close to the end of its life is required

by the purchaser, again the seller can identify and ship the most appropriate lots. All these things combined mean that less produce will be thrown out, and less disagreements between sellers and purchasers will occur.”

As software and functions tied to them become more robust, opportunities for effective electronic collaboration become additionally frequent.

Waud is seeing more collaboration and integration between customers’ and vendors’ systems, and systems other related businesses use. “This allows data to move in an automated manner from one company to the next, freeing up people to do what they need to do. These types of tasks need to be reviewed, so well-designed summary reports, as well as real time verification processes, go hand in hand to ensure these exchanges of data are correct, on time, and most importantly, legitimate.”

Heatherington says automation that removes the need for humans to decide which buttons to push has an inherent advantage.

“Automation can, without doubt, drive significant change in the fresh produce industry by reducing the time required by human operators to process data, eliminating rekeying and duplicate tasking and delivering the correct results fast,” he says. “There is a strong need in the produce industry for granular, pallet by pallet, consignment by consignment, inventory control and smart software delivers the data necessary for any task that must be recorded and integrated while not relying on it being in someone’s head or in an external document.”

He adds one Prophet client with over \$400

million in berry sales annually has completely automated its complex accounting and settlement processes to more than 100 growers.

## DO MORE AND DO IT FASTER

“The demand to do more for less, and do it faster, increases every day,” says Waud, and software can help a produce provider deal with complex functions, as well as simple, yet time-consuming, tasks.

“We’re on a mission to continuously improve our Produce Inventory Control System software,” he adds. “We talk with customers and prospects on a daily basis about what they do, and what they want to do. Then we look for ways to handle those things in PICS. An example of a big-time saving enhancement we recently made was to allow payments to vendors to be done electronically, instead of printing and mailing checks. What a time-saver.”

The produce industry relies on relationships, visibility into changing markets, and the quick and efficient movement of perishables, Silo’s Braun says. Even small inefficiencies lead to waste and strain relationships. And they cost money.

“Technology can reduce those areas of friction with actionable insights into market trends, streamlined communication across vendors and customers, and insight into the best routes to transport their product,” says Braun. “At Silo, we are building a network of produce professionals. Our technology is offering them a better way to communicate, identify new business opportunities, and work together without the friction or lack of visi-

## ■ TECHNOLOGY BOOSTS TRACEABILITY

The complex supply chain today provides consumers with more produce from across the globe and throughout the year, but that can make food safety a bigger issue that technology must address.

Technology can help produce businesses address tough and tricky functions such as food safety and transparency in a climate where many consumers want to know more about where their food comes from and how it is being grown.

“As the produce industry moves towards full traceability, we will see consumer confidence improve,” says Charles Waud of Ontario, Canada-based WaudWare. “In the past when there has been a recall, we have often seen delays before tracing information is available. This erodes consumer confidence and, in turn, causes a reduction in sales. In some

instances, when there has been a recall, incorrect information was provided, which caused consumers to stop buying certain products completely. When all produce companies have automated traceability systems, and the information about a product can be looked up from farm to fork, consumer confidence will increase.”

Retailers and the whole supply chain have to be able to count on timely information and speedy intervention when necessary.

“Nothing moves faster than the speed of light, and nothing is more efficient at both parsing vast quantities of data and generating highly accurate inference like software and the internet,” Ashton Braun, Silo chief executive, says. “The power of a single tool like Silo Trace can both recall and inference, within seconds, what prod-

ucts have issues, exactly what lots they came from, when, and what other products need to be pulled due to coexistence on trucks or warehouses. Technology like this is not just effective at traceability, but it also is effective at providing more equitable financial solutions to growers and small businesses.”

Likewise, Prophet has a fully integrated quality analysis and inspection system coupled with its Lot Accounting foundation designed to deliver tight traceability, says Mick Heatherington of software provider Prophet North America, Westlake Village, CA. “Once produce — bulk, raw or packed — enters the supply chain of any produce operator using Prophet, it can be tracked and traced, no matter what manufacturing or packing process the produce has been through.”



bility that results in waste and a tarnished brand.”

In the future, a number of developing technologies will dovetail to provide the produce sector even greater support and create opportunities to better service consumers.

“Robotic process automation, machine learning, intelligent automation, data management, blockchain, advanced analytics, data exchange, the internet of things, 5G and the massive capacity of next generation microchips are all relevant technologies that will play the critical role in growing, harvesting, packing and distributing produce to the consumer in a sustainable and transparent way,” Heatherington says. “Those produce operators who embrace and adopt these technologies and partner with ERP (enterprise resource planning) vendors who are committed to and are

delivering these technologies will ultimately shape the industry.”

Braun says Silo continually develops products and features to address the evolving market, but ultimately, the foundation of the business is the interaction with clients. “Everything we build is built in partnership with produce businesses in our networks, across the world, and up and down the supply chain,” he says.

Supply chain issues affect everyone, whether in the case of delayed packages or vendor shorts, Brill says, adding Shelf Engine is using machine learning models to alleviate those disappointments with continuous learning and adjustment.

“When a vendor is limited on a certain product, we can replace it with another item that is just as likely to sell,” she says. “This

keeps shelves full and customers happy. One thing that Shelf Engine is uniquely positioned to do is predict consumer demand based on historical sales trends. Because our focus has been on the last point in the supply chain, the retailer, we have insights into demand at the end of the pipeline. This means we can share these insights further upstream, providing forecasted demand to our vendor partners.”

“Imagine a future world in which vendors can anticipate how much of an item they’ll sell ahead of time, and order raw materials in advance to hedge against potential supply chain issues. Shelf Engine’s models utilize insights around historical product demand, coupled with supply chain insights to help our partners plan for fluctuations in supply and demand, making us uniquely positioned to help our customers stock their shelves.” **pb**

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